

# Water Stewardship



Pictured above: Employee at Greenhills Operations, Canada.

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Water is an essential resource for people, communities and the environment. Water scarcity affects one-quarter of the world's population<sup>1</sup> and natural resource crises, including water, are among the top 10 global risks identified by the World Economic Forum's 2021 Global Risks Report.<sup>2</sup> Recognizing the importance of water, governments and companies are working to improve the management, protection and restoration of the world's fresh water ecosystems.

Water is also a critical input to the mining process, used in several activities including mineral processing, dust suppression, transport, and employee use. Mining can affect both the availability and the quality of water in surrounding environments, requiring careful planning and mitigation procedures to minimize these impacts.

Teck recognizes that water is essential to communities in the watersheds where we operate, that access to water is a fundamental human right and that responsible water management is essential to maintaining trust. We work to protect water quality downstream of our operations, improve water use efficiency, and engage with stakeholders and Indigenous Peoples on watershed management wherever we operate. We also operate in water-scarce regions such as Chile, and we work to minimize fresh water use in these regions. To address this, we have developed a strategic priority to transition to seawater or low-quality water

sources for all operations in water-scarce regions by 2040. In 2020, we advanced construction of a desalination plant at our Quebrada Blanca Phase 2 (QB2) project, which will allow us to avoid using fresh water in this water-scarce region.

On water quality, we met our target of zero significant water-related incidents in 2020. We also continued to implement the Elk Valley Water Quality Plan at our steelmaking coal operations in southeast British Columbia. Major activities included the completion of the Elkview SRF water treatment facility expansion and the ongoing construction of the Fording River South water treatment facility. Teck has made significant progress towards achieving the objectives of the Elk Valley Water Quality Plan, a long-term approach to address the management of selenium and other constituents in the Elk Valley. For more information, see the Managing Water Quality in the Elk Valley section on page 14.

## GRI Indicators and Topic Boundary

102-34, 303-103, 303-1, 303-2, 303-3, 303-4, 303-5, 306-3, 307-1

This topic is considered one of the most material by our shareholders, employees, local communities, regulators and society in the context of Teck's operations.

## How Does Teck Manage This Topic?

Information about how we steward water, including relevant policies, our alignment to the ICMM water framework, management practices and systems, is available for [download on our website](#).

<sup>1</sup>Updated Global Water Risk Atlas Reveals Top Water-Stressed Countries and States. World Resources Institute. 2019. <sup>2</sup>Global Risk Report 2021. World Economic Forum. 2021.

## 2020 Highlights

**3.3** / the number of times water is reused and recycled at mining operations

Up to **13%** / reduction in fresh water use at our Chilean operations

Initiated commissioning of the **20-million-litres-per-day Elkview saturated rock fill (SRF) water treatment facility.**

Completion of **five operational water reviews** in accordance with our Water Governance Framework.

## Our Performance in Water Stewardship in 2020

**Our Targets and Commitments** Teck is committed to responsible management of water resources, and to protecting water quality and water access where we operate. The following table summarizes our performance against our new sustainability strategy and goals for water stewardship.

Sustainability Strategy Goals	Status	Summary of Progress in 2020
Strategic Priority: Transition to seawater or low-quality water sources for all operations in water-scarce regions by 2040		
<b>Goal:</b> By 2025, design all development projects in water-scarce regions with a seawater or low-quality water source.	On track	Identified development projects located in water-scarce regions and assessed opportunities for transitioning to seawater or low-quality water sources.
Strategic Priority: Implement innovative water management and water treatment solutions to protect water quality downstream of our operations		
<b>Goal:</b> By 2025, implement new source control or mine design strategies and water treatment systems to further advance efforts to manage water quality at our operations.	On track	Advanced research and development of source control options and design of a full-scale source control project at Elkview. Implementation of new water treatment systems are underway or completed at Elkview, Fording River and Red Dog operations in 2020.

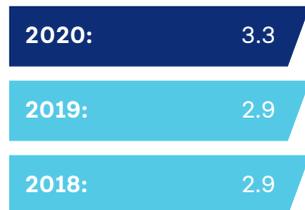
## Key Performance Indicators

### Indicator

Number of times water was reused and recycled at mining operations

### Target

No target

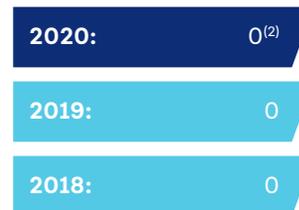


### Indicator

Significant<sup>(1)</sup> water-related incidents

### Target

Achieve zero significant water-related incidents each year



- (1) Teck uses a risk management consequence matrix to determine incident severity, which includes environmental, safety, community, reputational, legal and financial aspects. "Significant incidents" includes incidents assessed as Level 4 or Level 5 based on our risk matrix and guidance.
- (2) The fish decline in the Upper Fording River is not classified as a significant water-related incident in accordance with our incident reporting system as it has not been connected to a specific incident under our control. However, the decline is a significant event that Teck is taking very seriously and we are fully committed to a thorough and extensive evaluation of cause and implementation of the comprehensive recovery plan.

## Managing Water Quality in the Elk Valley

In 2020, we continued to advance the Elk Valley Water Quality Plan ("the Plan"), a long-term approach to address the management of selenium and other substances released by mining activities throughout the Elk Valley watershed. The Plan was approved in 2014 by the B.C. Minister of Environment and developed in cooperation with governments in Canada and the U.S. as well as with Indigenous groups, communities, independent scientific experts and others. The goal of the Plan is to stabilize and reverse the trend of mine-related substances and to maintain the health of the watershed while allowing for continued sustainable mining in the region where our steelmaking coal operations are located. The Plan is among the largest water quality management programs in the world, and Teck is making significant progress in advancing the Plan and ultimately protecting the Elk Valley watershed.

The Plan establishes short-, medium- and long-term water quality targets, which are protective of the environment and human health, for selenium, nitrate, sulphate and cadmium, as well as a plan to manage calcite formation. In 2020, we continued to implement a range of practices and mitigation projects as part of the Plan, including expanding our use of liners for explosives to reduce nitrate generated from blasting, doubling the capacity of SRF treatment facilities and advancing construction of the Fording River South Water Treatment Facility into the commissioning phase.

For information on our management of water quality in the Elk Valley, see [our website](#).

### Monitoring Aquatic Health

Teck conducts ongoing aquatic health studies and monitoring in the Elk Valley. Making this information broadly available helps advance community knowledge and understanding, and can accelerate the pace of scientific progress and innovation. This includes regular water quality sampling at approximately 100 stations in the Elk Valley. Monitoring shows that selenium concentrations have been reduced downstream of our water treatment facility at Line Creek. We expect further significant reductions as the Fording River South and Elkview SRF treatment facilities come online.

Fish census data obtained in late 2019 showed unexpected and substantial reductions in populations of westslope cutthroat trout in the upper Fording River, which is located in the area of our Fording River and Greenhills operations in the Elk Valley. In early 2020, Teck immediately established an Evaluation of Cause Team of external experts who are investigating to determine whether the reductions are associated with water quality issues, flow conditions, habitat availability, predation, other natural causes or a combination of these factors. The external team is expected to deliver a report in mid-2021. Teck has been committed to a transparent process and has been meeting on a biweekly basis with the Ktunaxa Nation Council (KNC) and government regulators to discuss the work in this area.

During 2020, we also developed and implemented short-term recovery actions to improve fish habitat and support recovery. We took precautionary measures to limit handling and sampling of fish, and to limit water use at our operations during low-flow periods. A comprehensive recovery plan is in development.

This fish decline is not classified as a significant water-related incident in accordance with our incident reporting system, as it has not been connected to a specific incident under our control. However, the decline is a significant event that Teck is taking very seriously and we are fully committed to a thorough and extensive evaluation of cause and implementation of the comprehensive recovery plan.

Annual reports about our ongoing monitoring programs, which are prepared by professional scientists, reflect data generated since the Elk Valley Water Quality Plan was approved. The reports have been reviewed by the Environmental Monitoring Committee (EMC), a group that provides science-based and Ktunaxa traditional knowledge advice and input to Teck and the B.C. Ministry of Environment and the Climate Change Strategy regarding monitoring designs and reports in the Elk Valley. The EMC includes representatives from the Ministry of Environment and Climate Change Strategy; Ministry of Energy, Mines, and Low Carbon Innovation; KNC; Interior Health Authority; and Teck, as well as an independent scientist. Read the 2020 EMC Report available at [teck.com/media/2020-EMC.pdf](https://teck.com/media/2020-EMC.pdf)

## Water Treatment Facilities

In 2020, we continued to advance construction of several water treatment facilities to expand our ability to treat and protect water quality. The West Line Creek water treatment facility is operating and successfully treating up to 7.5 million litres of water a day, and our first SRF facility has been successfully treating up to 10 million litres of mine-affected water per day at Elkview Operations. At the end of 2020, we were commissioning an expansion that will double treatment capacity at the Elkview SRF facility to 20 million litres per day, and we are building a new tank-based treatment plant at our Fording River Operations, which will have the capacity to treat 20 million litres of water per day operating at full capacity. A fourth water treatment facility has also begun construction at Fording River Operations. In 2021, we expect to have capacity to treat up to 47.5 million litres per day; we expect further significant reductions of selenium and nitrate as the Fording River and Elkview facilities come online.

The pace of construction of water treatment facilities has been hindered by challenges related to the treatment technology and, more recently, as a result of COVID-19. While we have recorded non-compliances relative to the permit limits established by the Elk Valley Water Quality Plan as a result of the pace of construction, we are seeing positive results from our efforts: the SRF technology is achieving

## Community Engagement on Water

Access to clean and sufficient water by users in our areas of influence is important to us and to our stakeholders. When implementing our water management practices, we consider and engage with other water users in the watersheds where

near-complete removal of selenium and nitrate, and we are now seeing reductions in selenium concentrations downstream of the Line Creek treatment facility.

Capital spending in 2020 on water treatment was \$266 million. Capital spending in 2021 on water treatment and water management is estimated to be approximately \$255 million. From 2022 to 2024, we plan to invest an additional \$300 to \$400 million of capital on water management and water treatment. In addition, the aggregate cost of the incremental measures required under the October 2020 Direction issued by Environment and Climate Change Canada, outlined below, are preliminarily estimated at \$350 to \$400 million between 2021 and 2030.

### Reducing Nitrate in Blasting

Our comprehensive research and development program has led to the creation of a new nitrate reduction technique that uses liners to prevent nitrate-containing explosives from coming into contact with water, which significantly reduces the amount of nitrate lost to the environment. This technique was successfully piloted in 2019, and further implemented throughout our operations in the Elk Valley in 2020. We continue to work towards a target of having 95% of all explosives being placed into lined holes.

### Research and Development

Teck is focused on continued research and development to improve water performance in the short and long term. Examples of this work include:

- **Source control:** Aggressively pursuing the use of source control alternatives in our mined rock facilities including the addition of suboxic layers and constructing mined rock facilities to limit air entry and the corresponding natural reactions that generate constituents of interest
- **Alternative water treatment technologies:** Exploring the use of smaller water treatment facilities that can be built much closer to points of discharge and evaluating emerging treatment technologies that target mine water constituents of interest
- **Mined rock covers:** Evaluation of different forms of covers, ranging from vegetative to geomembrane covers, for mined rock piles
- **Diversions:** Assessing the contribution of diversions to water quality performance through the construction and monitoring of the Kilmarnock Creek Diversion at the Fording River Operations

we operate. In 2020, we engaged with local communities and Indigenous Peoples in the Elk Valley to share updates on our work on water quality in the watershed, as well as new technologies being implemented to improve water quality.

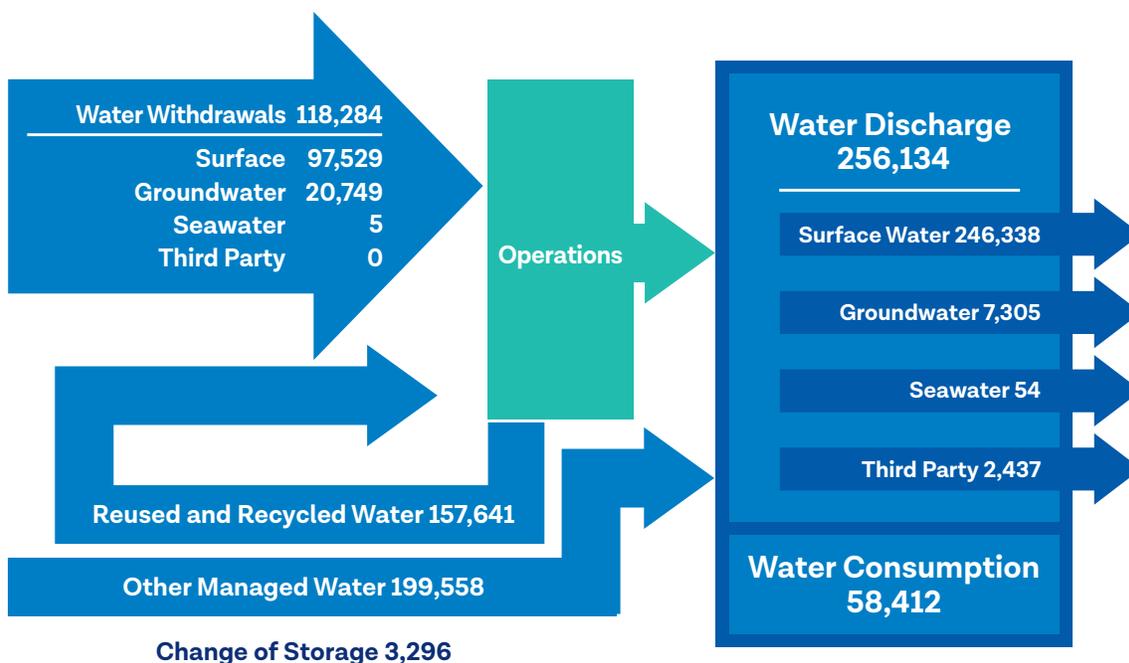
## Improving Water Efficiency

We monitor water data at all of our operations and incorporate the data into scenario planning using site-wide water balances.<sup>3</sup> The company-wide water balance is the aggregation of all of the site-wide water balances; it is complex, due to the variability of natural factors such as rainfall, snowmelt, and the diversity of the climates and geological conditions where our operations are located. Understanding our site-wide and company-wide water balances is key to improving water management practices and to enabling better decision-making.

In 2018, we updated our water data collection and reporting to align with the ICMM's *A practical guide to consistent water reporting*. Our detailed water data is provided in our [2020 Sustainability Performance Data](#) spreadsheet.

At Teck, we use water primarily for material processing and transport, cooling and dust control. A portion of the water we use is consumed through entrainment in our products and tailings or through evaporative processes. The water we use is typically obtained from where our operations interface with surface water and groundwater systems, and we are transitioning to seawater sources in water-scarce regions such as northern Chile. We manage and discharge a significant amount of water without use and we discharge this water as close as practical to the source location. The water we discharge is monitored and treated where necessary.

**Figure 3: Company-Wide Operational Water Balance – Megalitres (ML)**



**Water withdrawal:** All water that enters the operational water system and is used to supply the operational water demands.

**Other managed water:** Water that is actively managed without intent to supply the operational water demands.

**Water discharge:** Water that is released back to the water environment or to a third party.

**Water consumption:** Water that is permanently removed, by evaporation, entrainment (in product or waste) or other losses and not returned to the water environment or a third party.

**Reused and recycled water:** Water that has been used in an operational task and is recovered and used again in an operational task, either without treatment (reuse) or with treatment (recycle).

**Change in water storage:** The net change (positive or negative) in the volume of water stored over the accounting

period; a positive number indicates water accumulation and a negative number indicates water reduction.

### Types of Water

**Surface water:** Water from precipitation and runoff that is not diverted around the operations; includes water inputs from surface waterbodies that may be located within the boundaries of our operations.

**Groundwater:** Water from beneath the earth's surface that collects or flows in the porous spaces in soil and rock that is not diverted around the operations.

**Third-party sources:** Water supplied by an entity external to the operation, such as from a municipality; we do not use wastewater from other organizations.

**Seawater:** Water obtained from a sea or ocean.

<sup>3</sup>Site-wide water balances provide an understanding of water withdrawals, consumption, reuse/recycle and discharge volumes at each operation. Water balances are developed using a mix of measurements and modelling computation.

In 2020, the number of times water was reused and recycled, expressed as the ratio of water reused and recycled to water withdrawals, was 3.3 at our mining operations. This means that we reused the same water approximately 3.3 times on average before treating and returning it to the environment.

Trail Operations accounts for 60% of our water withdrawals. Almost all the water used at Trail Operations is for cooling purposes, meaning that it does not come into contact with chemicals or reagents, and the only change it undergoes is a slight increase in temperature before being returned to the

environment within regulatory-approved conditions. In 2020, our water withdrawals were lower than in 2019. At our mining operations, we processed less ore and raw coal in 2020, resulting in a proportional reduction of water withdrawals.

Actions taken to achieve our target of reducing fresh water use in Chile by 15% resulted in the reduction of our fresh water use by up to 13% in 2020. Our total water consumption in areas with water stress<sup>4</sup> was 11,528 ML in 2020. Additional water data is provided in our [2020 Sustainability Performance Data](#) spreadsheet.

**Table 2: Water Withdrawals and Water Reused and Recycled – Megalitres (ML)**

All operations	2020	2019	2018	2017
Water withdrawals (ML)	<b>118,284</b>	127,018	128,146	115,368
Water reused/recycled (ML)	<b>157,641</b>	148,914	174,688	176,563
<b>Mining operations</b>				
Water withdrawals (ML)	<b>47,739</b>	51,954	60,003	44,225
Water reused/recycled (ML)	<b>157,641</b>	148,914	174,688	176,563
Number of times water is reused and recycled (ratio of reused/recycled and withdrawals)	<b>3.3</b>	2.9	2.9	4.0

### Case Study: Improving Water Quality in the Elk Valley with New Treatment Facilities

Since 2014, Teck has been implementing the Elk Valley Water Quality Plan to ensure the ongoing health of the watershed while allowing continued responsible mining in the region. In 2020, we met significant milestones on several key water treatment projects. Our first water treatment facility at Line Creek is successfully treating up to 7.5 million litres of water per day. We are applying what we have learned in building the Active Water Treatment facility at our Fording River Operations, which is currently under construction and scheduled to be

completed in 2021. We are also building on the initial successes of our Saturated Rock Fill (SRF) technology, a nature-inspired water treatment solution that effectively removes compounds such as selenium and nitrate from water. In 2020, we completed a project to double the treatment capacity of the Elkview SRF facility, and by 2021, we expect to have capacity to treat up to 47.5 million litres of water per day, nearly two and a half times our 2020 treatment capacity. Read the full case study at [teck.com/news/stories](https://teck.com/news/stories).

<sup>4</sup>Water-stressed areas lack the ability to meet human and ecological demands for fresh water. Water stress components include water availability, quality and accessibility. The proportion of sites in water-stressed areas is 20%.

## Water-Related Compliance

### Non-Compliances and Significant Water-Related Incidents

We continue to implement the water quality improvement measures identified in the Elk Valley Water Quality Plan. The pace of construction of some of the water treatment facilities has been hindered by challenges related to the treatment technology and, more recently, as a result of COVID-19. As a result of the slower-than-anticipated pace of construction, we have recorded non-compliances relative to certain of the permit limits in the Elk Valley. To address these non-compliances, we are aggressively advancing construction of several water treatment facilities and we are implementing other water quality improvement measures in parallel, such as reducing nitrate from blasting, and accelerating research and development projects in the areas of source control, diversions and mined rock cover systems.

We assess the severity of environmental incidents based on the potential environmental, safety, community, reputational and financial impacts. Based on our incident severity criteria, there were no significant water-related incidents in 2020.

### Litigation

Teck continues studies under the 2006 settlement agreement with the U.S. Environmental Protection Agency (EPA) to conduct a remedial investigation on the Upper Columbia River in Washington state. The Lake Roosevelt litigation involving Teck in the Federal District Court for the Eastern District of Washington continues. In December 2012, on the basis of stipulated facts agreed between Teck and the plaintiffs, the Court found in favour of the plaintiffs in phase one of the case, issuing a declaratory judgment that Teck is liable under the *Comprehensive Environmental Response, Compensation, and Liability Act* for response costs, the amount of which will be determined in later phases of the case. A hearing with respect to natural resource damages and assessment costs is expected to follow completion of the remedial investigation and feasibility study being undertaken by Teck. For more information, see pages 113–115 of our [2020 Annual Information Form](#).

### Charges, Fines and Penalties

During the third quarter of 2018, Teck received notice from Canadian federal prosecutors of potential charges under the *Fisheries Act* in connection with discharges of selenium and calcite from steelmaking coal mines in the Elk Valley. Since 2014, compliance limits and site performance objectives for selenium and other constituents as well as requirements to address calcite in surface water throughout the Elk Valley and in the Koochanusa Reservoir have been established under a regional permit issued by the provincial government, which references the Elk Valley Water Quality Plan. If federal charges are laid, potential penalties may include fines as well as orders with respect to operational matters. Discussions with respect to the draft charges continue. In October 2020, Environment and Climate Change Canada issued a Direction under the *Fisheries Act* to Teck Coal Limited, setting out measures to be taken to improve water quality and prevent calcite deposition in the Elk Valley that are complementary to measures already included in the Elk Valley Water Quality Plan being implemented by Teck.